

Claims:

1. A ball propelling assembly for propelling a ball having a seam, the assembly including:-

5 a ball positioner having opposed ball supports which engage and rotate the ball which thereby moves relative to the ball supports until positioned relative thereto in a predetermined alignment;

a ball spinner having opposed ball supports which engage and spin the ball in the predetermined alignment, and

10 a ball propeller which propels the spinning ball from the assembly along an axis of propulsion.

2. The ball propelling assembly of claim 1, wherein the ball spinner includes two pairs of opposed ball supports, the pairs being aligned to each other at right angles.

15 3. The ball propelling assembly of claim 2, wherein one of the opposed pairs comprises the pair of opposed ball supports in the ball positioner.

20 4. The ball propelling assembly of claim 2, wherein one of the opposed pairs comprises the pair of opposed ball supports in the ball spinner.

5. The ball propelling assembly of claim 1, wherein the ball supports can be advanced towards and retracted away from a loaded ball.

6. The ball propelling assembly of claim 1, wherein the assembly includes a motor which rotates and/or spins the ball supports.
7. The ball propelling assembly of claim 1, wherein the portion of each ball support that comes into contact with the ball has a substantially concave face with a plurality of adjacent scallops or grooves which meet at peaks on the rim of the face.
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8. The ball propelling assembly of claim 1, wherein the predetermined alignment is either such that the ball is positioned to be propelled with a two seam spin, or is propelled with a four seam spin.
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9. The ball propelling assembly of claim 1, wherein the predetermined alignment is such that the ball is not engaged by the opposed ball supports on the seam of the ball.
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10. A method of propelling a ball having a seam, the method including:-
engaging and rotating the ball by a ball positioner having opposed ball supports, the ball thereby moving relative to the ball supports until positioned
20 relative thereto in a predetermined alignment;
engaging and spinning the ball engaged thereby in the predetermined alignment by a ball spinner having opposed ball supports, and
propelling the spinning ball from the assembly along an axis of propulsion by a ball propeller.

11. The ball propelling assembly of claim 1 or 10, wherein the ball is a baseball or softball.

12. An assembly for aligning a baseball in a baseball propelling machine, the
5 assembly comprising at least one pair of opposing ball supports, wherein rotation of the ball supports causes a loaded baseball to rotate about a predetermined axis, wherein the pressure exerted by the ball supports on the baseball is insufficient to prevent the axis of rotation of the baseball changing whilst being rotated and the baseball adopting the predetermined axis of
10 rotation.

13. The assembly of claim 12, wherein the pair of opposing ball supports can move from a retracted position where they are not in contact with the baseball to an advanced position in which they are in contact with a loaded baseball.

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14. The assembly of claim 13, wherein the ball supports are advanced or retracted by a pneumatic piston or linear motor.

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15. The assembly of claim 12, wherein each of the ball supports is rotated by a separate motor.

16. The assembly according to claim 12, wherein the baseball is aligned such that the axis of rotation is centred in, and extends through, one pair of the opposite loop shaped regions formed by the continuous stitched seam of the
25 baseball.

17. . The assembly according to claim 12, wherein the predetermined axis is either such that the ball is positioned to be propelled with a two seam spin, or is propelled with a four seam spin.

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18. The assembly according to claim 12, wherein a single pair of opposed ball supports firstly causes the baseball to rotate about a predetermined axis and thereafter apply a predetermined amount of spin to the baseball so as to be propelled in the two seam position.

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19. The assembly according to claim 12, wherein a first pair of opposed ball supports firstly causes the baseball to rotate about a predetermined axis and thereafter a second pair of opposed ball supports apply a predetermined amount of spin to the baseball so as to be propelled in the four seam position.

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20. The assembly of claim 19, wherein the first pair of ball supports are rotated at a different speed to the second pair of ball supports.

21. The assembly of claim 18 or 19, wherein the opposing pair of ball supports contact the baseball with two to six kilograms of pressure when aligning the baseball to rotate about a predetermined axis of rotation.

22. The assembly of claim 18 or 19, wherein the opposing pair of ball supports contact the baseball with twelve to eighteen kilograms of pressure when spinning the baseball in the two or four seam position.

23. The assembly of claim 13, wherein the ball supports have a substantially concave face which is capable of contacting the baseball.
- 5 24. The assembly of claim 22, wherein the concave face has a plurality of adjacent scallops or grooves which meet at peaks on the rim of the face.
25. A method of aligning a baseball in a baseball propelling machine comprising bringing a pair of opposing ball supports into contact with a baseball
10 and rotating the ball supports until the baseball rotates about a predetermined axis, wherein the pressure exerted by the ball supports on the baseball is insufficient to prevent the axis of rotation of the baseball changing whilst being rotated and the baseball adopting the predetermined axis of rotation.
- 15 26. An expanding gas powered ball propelling machine, comprising:
(a) a barrel;
(b) at least one ball support;
(c) at least one motor to rotate the at least one ball support, and
wherein the at least one ball support can be advanced and retracted towards a
20 loaded ball.